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<130> 16163-004001

<140> US 09/859,722

<141> 2001-05-17

<150> US 60/205,875

<151> 2000-05-19

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<170> FastSEQ for Windows Version 4.0
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<210> 1

<211> 830

<212> PRT

<213> Homo sapiens

<400> 1

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| Met 1 | Ala | Asn | Cys | Gln 5 | Ile | Ala | Ile | Leu | Tyr 10 | Gln | Arg | Phe | Gln | Arg 15 | Val |
| Val | Phe | Gly | Ile | Ser | Gln | Leu | Leu | Cys | Phe | Ser | Ala | Leu | Ile | Ser | Glu |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Leu | Thr | Asn | Gln | Lys | Glu | Val | Ala | Ala | Trp | Thr | Tyr | His | Tyr | Ser | Thr |
| | | | 35 | | | | | 40 | | | | | 45 | | |
| Lys | Ala | Tyr | Ser | Trp | Asn | Ile | Ser | Arg | Lys | Tyr | Cys | Gln | Asn | Arg | Tyr |
| | | | 50 | | | | | 55 | | | | 60 | | | |
| Thr | Asp | Leu | Val | Ala | Ile | Gln | Asn | Lys | Asn | Glu | Ile | Asp | Tyr | Leu | Asn |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 |
| Lys | Val | Leu | Pro | Tyr | Tyr | Ser | Ser | Tyr | Tyr | Trp | Ile | Gly | Ile | Arg | Lys |
| | | | | 85 | | | | | 90 | | | | | 95 | |
| Asn | Asn | Lys | Thr | Trp | Thr | Trp | Val | Gly | Thr | Lys | Lys | Ala | Leu | Thr | Asn |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Glu | Ala | Glu | Asn | Trp | Ala | Asp | Asn | Glu | Pro | Asn | Asn | Lys | Arg | Asn | Asn |
| | | | 115 | | | | | 120 | | | | 125 | | | |
| Glu | Asp | Cys | Val | Glu | Ile | Tyr | Ile | Lys | Ser | Pro | Ser | Ala | Pro | Gly | Lys |
| | | | 130 | | | | 135 | | | | | 140 | | | |
| Trp | Asn | Asp | Glu | His | Cys | Leu | Lys | Lys | Lys | His | Ala | Leu | Cys | Tyr | Thr |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 |
| Ala | Ser | Cys | Gln | Asp | Met | Ser | Cys | Ser | Lys | Gln | Gly | Glu | Cys | Leu | Glu |
| | | | | 165 | | | | | 170 | | | | | 175 | |
| Thr | Ile | Gly | Asn | Tyr | Thr | Cys | Ser | Cys | Tyr | Pro | Gly | Phe | Tyr | Gly | Pro |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Glu | Cys | Glu | Tyr | Val | Arg | Glu | Cys | Gly | Glu | Leu | Glu | Leu | Pro | Gln | His |
| | | | 195 | | | | | 200 | | | | 205 | | | |
| Val | Leu | Met | Asn | Cys | Ser | His | Pro | Leu | Gly | Asn | Phe | Ser | Phe | Asn | Ser |
| | | | 210 | | | | 215 | | | | 220 | | | | |

| | | | | |
|---|-----|-----|-----|-----|
| 210 | | 215 | | 220 |
| Gln Cys Ser Phe His Cys Thr Asp Gly Tyr Gln Val Asn Gly Pro Ser | | | | |
| 225 | | 230 | | 240 |
| Lys Leu Glu Cys Leu Ala Ser Gly Ile Trp Thr Asn Lys Pro Pro Gln | | | | |
| | 245 | | 250 | 255 |
| Cys Leu Ala Ala Gln Cys Pro Pro Leu Lys Ile Pro Glu Arg Gly Asn | | | | |
| | 260 | | 265 | 270 |
| Met Ile Cys Leu His Ser Ala Lys Ala Phe Gln His Gln Ser Ser Cys | | | | |
| | 275 | | 280 | 285 |
| Ser Phe Ser Cys Glu Glu Gly Phe Ala Leu Val Gly Pro Glu Val Val | | | | |
| | 290 | | 295 | 300 |
| Gln Cys Thr Ala Ser Gly Val Trp Thr Ala Pro Ala Pro Val Cys Lys | | | | |
| 305 | | 310 | | 320 |
| Ala Val Gln Cys Gln His Leu Glu Ala Pro Ser Glu Gly Thr Met Asp | | | | |
| | 325 | | 330 | 335 |
| Cys Val His Pro Leu Thr Ala Phe Ala Tyr Gly Ser Ser Cys Lys Phe | | | | |
| | 340 | | 345 | 350 |
| Glu Cys Gln Pro Gly Tyr Arg Val Arg Gly Leu Asp Met Leu Arg Cys | | | | |
| | 355 | | 360 | 365 |
| Ile Asp Ser Gly His Trp Ser Ala Pro Leu Pro Thr Cys Glu Ala Ile | | | | |
| | 370 | | 375 | 380 |
| Ser Cys Glu Pro Leu Glu Ser Pro Val His Gly Ser Met Asp Cys Ser | | | | |
| 385 | | 390 | | 400 |
| Pro Ser Leu Arg Ala Phe Gln Tyr Asp Thr Asn Cys Ser Phe Arg Cys | | | | |
| | 405 | | 410 | 415 |
| Ala Glu Gly Phe Met Leu Arg Gly Ala Asp Ile Val Arg Cys Asp Asn | | | | |
| | 420 | | 425 | 430 |
| Leu Gly Gln Trp Thr Ala Pro Ala Pro Val Cys Gln Ala Leu Gln Cys | | | | |
| | 435 | | 440 | 445 |
| Gln Asp Leu Pro Val Pro Asn Glu Ala Arg Val Asn Cys Ser His Pro | | | | |
| | 450 | | 455 | 460 |
| Phe Gly Ala Phe Arg Tyr Gln Ser Val Cys Ser Phe Thr Cys Asn Glu | | | | |
| 465 | | 470 | | 480 |
| Gly Leu Leu Leu Val Gly Ala Ser Val Leu Gln Cys Leu Ala Thr Gly | | | | |
| | 485 | | 490 | 495 |
| Asn Trp Asn Ser Val Pro Pro Glu Cys Gln Ala Ile Pro Cys Thr Pro | | | | |
| | 500 | | 505 | 510 |
| Leu Leu Ser Pro Gln Asn Gly Thr Met Thr Cys Val Gln Pro Leu Gly | | | | |
| | 515 | | 520 | 525 |
| Ser Ser Ser Tyr Lys Ser Thr Cys Gln Phe Ile Cys Asp Glu Gly Tyr | | | | |
| | 530 | | 535 | 540 |
| Ser Leu Ser Gly Pro Glu Arg Leu Asp Cys Thr Arg Ser Gly Arg Trp | | | | |
| 545 | | 550 | | 560 |
| Thr Asp Ser Pro Pro Met Cys Glu Ala Ile Lys Cys Pro Glu Leu Phe | | | | |
| | 565 | | 570 | 575 |
| Ala Pro Glu Gln Gly Ser Leu Asp Cys Ser Asp Thr Arg Gly Glu Phe | | | | |
| | 580 | | 585 | 590 |
| Asn Val Gly Ser Thr Cys His Phe Ser Cys Asn Asn Gly Phe Lys Leu | | | | |
| | 595 | | 600 | 605 |
| Glu Gly Pro Asn Asn Val Glu Cys Thr Thr Ser Gly Arg Trp Ser Ala | | | | |
| | 610 | | 615 | 620 |
| Thr Pro Pro Thr Cys Lys Gly Ile Ala Ser Leu Pro Thr Pro Gly Leu | | | | |
| 625 | | 630 | | 640 |
| Gln Cys Pro Ala Leu Thr Thr Pro Gly Gln Gly Thr Met Tyr Cys Arg | | | | |
| | 645 | | 650 | 655 |
| His His Pro Gly Thr Phe Gly Phe Asn Thr Thr Cys Tyr Phe Gly Cys | | | | |
| | 660 | | 665 | 670 |

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Asn Ala Gly Phe Thr Leu Ile Gly Asp Ser Thr Leu Ser Cys Arg Pro
675 680 685
Ser Gly Gln Trp Thr Ala Val Thr Pro Ala Cys Arg Ala Val Lys Cys
690 695 700
Ser Glu Leu His Val Asn Lys Pro Ile Ala Met Asn Cys Ser Asn Leu
705 710 715 720
Trp Gly Asn Phe Ser Tyr Gly Ser Ile Cys Ser Phe His Cys Leu Glu
725 730 735
Gly Gln Leu Leu Asn Gly Ser Ala Gln Thr Ala Cys Gln Glu Asn Gly
740 745 750
His Trp Ser Thr Thr Val Pro Thr Cys Gln Ala Gly Pro Leu Thr Ile
755 760 765
Gln Glu Ala Leu Thr Tyr Phe Gly Gly Ala Val Ala Ser Thr Ile Gly
770 775 780
Leu Ile Met Gly Gly Thr Leu Leu Ala Leu Leu Arg Lys Arg Phe Arg
785 790 795 800
Gln Lys Asp Asp Gly Lys Cys Pro Leu Asn Pro His Ser His Leu Gly
805 810 815
Thr Tyr Gly Val Phe Thr Asn Ala Ala Phe Asp Pro Ser Pro
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<210> 2
<211> 610
<212> PRT
<213> Homo sapiens

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Tyr Asp Glu Ala Ser Ala Tyr Cys Gln Gln Arg Tyr Thr His Leu Val
35 40 45
Ala Ile Gln Asn Lys Glu Glu Ile Glu Tyr Leu Asn Ser Ile Leu Ser
50 55 60
Tyr Ser Pro Ser Tyr Tyr Trp Ile Gly Ile Arg Lys Val Asn Asn Val
65 70 75 80
Trp Val Trp Val Gly Thr Gln Lys Pro Leu Thr Glu Glu Ala Lys Asn
85 90 95
Trp Ala Pro Gly Glu Pro Asn Asn Arg Gln Lys Asp Glu Asp Cys Val
100 105 110
Glu Ile Tyr Ile Lys Arg Glu Lys Asp Val Gly Met Trp Asn Asp Glu
115 120 125
Arg Cys Ser Lys Lys Lys Leu Ala Leu Cys Tyr Thr Ala Ala Cys Thr
130 135 140
Asn Thr Ser Cys Ser Gly His Gly Glu Cys Val Glu Thr Ile Asn Asn
145 150 155 160
Tyr Thr Cys Lys Cys Asp Pro Gly Phe Ser Gly Leu Lys Cys Glu Gln
165 170 175
Ile Val Asn Cys Thr Ala Leu Glu Ser Pro Glu His Gly Ser Leu Val
180 185 190
Cys Ser His Pro Leu Gly Asn Phe Ser Tyr Asn Ser Ser Cys Ser Ile
195 200 205
Ser Cys Asp Arg Gly Tyr Leu Pro Ser Ser Met Glu Thr Met Gln Cys
210 215 220
Met Ser Ser Gly Glu Trp Ser Ala Pro Ile Pro Ala Cys Asn Val Val

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| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 225 | Glu | Cys | Asp | Ala | Val | Thr | Asn | Pro | Ala | Asn | Gly | Phe | Val | Glu | Cys | Phe | 240 |
| | | | | | 245 | | | | | 250 | | | | | | 255 | |
| | Gln | Asn | Pro | Gly | Ser | Phe | Pro | Trp | Asn | Thr | Thr | Cys | Thr | Phe | Asp | Cys | |
| | | | | 260 | | | | | 265 | | | | | 270 | | | |
| | Glu | Glu | Gly | Phe | Glu | Leu | Met | Gly | Ala | Gln | Ser | Leu | Gln | Cys | Thr | Ser | |
| | | | 275 | | | | | 280 | | | | | 285 | | | | |
| | Ser | Gly | Asn | Trp | Asp | Asn | Glu | Lys | Pro | Thr | Cys | Lys | Ala | Val | Thr | Cys | |
| | | 290 | | | | 295 | | | | | 300 | | | | | | |
| | Arg | Ala | Val | Arg | Gln | Pro | Gln | Asn | Gly | Ser | Val | Arg | Cys | Ser | His | Ser | |
| 305 | | | | | | 310 | | | | | 315 | | | | | 320 | |
| | Pro | Ala | Gly | Glu | Phe | Thr | Phe | Lys | Ser | Ser | Cys | Asn | Phe | Thr | Cys | Glu | |
| | | | | 325 | | | | | | 330 | | | | | 335 | | |
| | Glu | Gly | Phe | Met | Leu | Gln | Gly | Pro | Ala | Gln | Val | Glu | Cys | Thr | Thr | Gln | |
| | | | 340 | | | | | | 345 | | | | 350 | | | | |
| | Gly | Gln | Trp | Thr | Gln | Gln | Ile | Pro | Val | Cys | Glu | Ala | Phe | Gln | Cys | Thr | |
| | | 355 | | | | | | 360 | | | | 365 | | | | | |
| | Ala | Leu | Ser | Asn | Pro | Glu | Arg | Gly | Tyr | Met | Asn | Cys | Leu | Pro | Ser | Ala | |
| | | 370 | | | | 375 | | | | | 380 | | | | | | |
| | Ser | Gly | Ser | Phe | Arg | Tyr | Gly | Ser | Ser | Cys | Glu | Phe | Ser | Cys | Glu | Gln | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | | |
| | Gly | Phe | Val | Leu | Lys | Gly | Ser | Lys | Arg | Leu | Gln | Cys | Gly | Pro | Thr | Gly | |
| | | | | 405 | | | | | 410 | | | | 415 | | | | |
| | Glu | Trp | Asp | Asn | Glu | Lys | Pro | Thr | Cys | Glu | Ala | Val | Arg | Cys | Asp | Ala | |
| | | | 420 | | | | | | 425 | | | | 430 | | | | |
| | Val | His | Gln | Pro | Pro | Lys | Gly | Leu | Val | Arg | Cys | Ala | His | Ser | Pro | Ile | |
| | | 435 | | | | | 440 | | | | 445 | | | | | | |
| | Gly | Glu | Phe | Thr | Tyr | Lys | Ser | Ser | Cys | Ala | Phe | Ser | Cys | Glu | Glu | Gly | |
| | | 450 | | | | 455 | | | | 460 | | | | | | | |
| | Phe | Glu | Leu | Tyr | Gly | Ser | Thr | Gln | Leu | Glu | Cys | Thr | Ser | Gln | Gly | Gln | |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 | | |
| | Trp | Thr | Glu | Glu | Val | Pro | Ser | Cys | Gln | Val | Val | Lys | Cys | Ser | Ser | Leu | |
| | | | | 485 | | | | | 490 | | | | | 495 | | | |
| | Ala | Val | Pro | Gly | Lys | Ile | Asn | Met | Ser | Cys | Ser | Gly | Glu | Pro | Val | Phe | |
| | | | 500 | | | | | | 505 | | | | 510 | | | | |
| | Gly | Thr | Val | Cys | Lys | Phe | Ala | Cys | Pro | Glu | Gly | Trp | Thr | Leu | Asn | Gly | |
| | | 515 | | | | | 520 | | | | | 525 | | | | | |
| | Ser | Ala | Ala | Arg | Thr | Cys | Gly | Ala | Thr | Gly | His | Trp | Ser | Gly | Leu | Leu | |
| | | 530 | | | | 535 | | | | 540 | | | | | | | |
| | Pro | Thr | Cys | Glu | Ala | Pro | Thr | Glu | Ser | Asn | Ile | Pro | Leu | Val | Ala | Gly | |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 | | |
| | Leu | Ser | Ala | Ala | Gly | Leu | Ser | Leu | Leu | Thr | Leu | Ala | Pro | Phe | Leu | Leu | |
| | | | | 565 | | | | | 570 | | | | | 575 | | | |
| | Trp | Leu | Arg | Lys | Cys | Leu | Arg | Lys | Ala | Lys | Lys | Phe | Val | Pro | Ala | Ser | |
| | | | 580 | | | | | 585 | | | | 590 | | | | | |
| | Ser | Cys | Gln | Ser | Leu | Glu | Ser | Asp | Gly | Ser | Tyr | Gln | Lys | Pro | Ser | Tyr | |
| | | 595 | | | | | 600 | | | | | 605 | | | | | |
| | Ile | Leu | | | | | | | | | | | | | | | |
| | | 610 | | | | | | | | | | | | | | | |

<210> 3

<211> 412

<212> PRT

<213> Homo sapiens

<400> 3

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
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| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Ser | Leu | Gln | Leu | Trp | Asp | Thr | Trp | Ala | Asp | Glu | Ala | Glu | Lys | Ala | Leu |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Gly | Pro | Leu | Leu | Ala | Arg | Asp | Arg | Arg | Gln | Ala | Thr | Glu | Tyr | Glu | Tyr |
| | | 35 | | | | | 40 | | | | | 45 | | | |
| Leu | Asp | Tyr | Asp | Phe | Leu | Pro | Glu | Thr | Glu | Pro | Pro | Glu | Met | Leu | Arg |
| | 50 | | | | | 55 | | | | | 60 | | | | |
| Asn | Ser | Thr | Asp | Thr | Thr | Pro | Leu | Thr | Gly | Pro | Gly | Thr | Pro | Glu | Ser |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 |
| Thr | Thr | Val | Glu | Pro | Ala | Ala | Arg | Arg | Ser | Thr | Gly | Leu | Asp | Ala | Gly |
| | | | | 85 | | | | | 90 | | | | | 95 | |
| Gly | Ala | Val | Thr | Glu | Leu | Thr | Thr | Glu | Leu | Ala | Asn | Met | Gly | Asn | Leu |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Ser | Thr | Asp | Ser | Ala | Ala | Met | Glu | Ile | Gln | Thr | Thr | Gln | Pro | Ala | Ala |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| Thr | Glu | Ala | Gln | Thr | Thr | Gln | Pro | Val | Pro | Thr | Glu | Ala | Gln | Thr | Thr |
| | 130 | | | | | 135 | | | | | 140 | | | | |
| Pro | Leu | Ala | Ala | Thr | Glu | Ala | Gln | Thr | Thr | Arg | Leu | Thr | Ala | Thr | Glu |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 |
| Ala | Gln | Thr | Thr | Pro | Leu | Ala | Ala | Thr | Glu | Ala | Gln | Thr | Thr | Pro | Pro |
| | | | | 165 | | | | | 170 | | | | | 175 | |
| Ala | Ala | Thr | Glu | Ala | Gln | Thr | Thr | Gln | Pro | Thr | Gly | Leu | Glu | Ala | Gln |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Thr | Thr | Ala | Pro | Ala | Ala | Met | Glu | Ala | Gln | Thr | Thr | Ala | Pro | Ala | Ala |
| | | 195 | | | | | 200 | | | | | 205 | | | |
| Met | Glu | Ala | Gln | Thr | Thr | Pro | Pro | Ala | Ala | Met | Glu | Ala | Gln | Thr | Thr |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Gln | Thr | Thr | Ala | Met | Glu | Ala | Gln | Thr | Thr | Ala | Pro | Glu | Ala | Thr | Glu |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Ala | Gln | Thr | Thr | Gln | Pro | Thr | Ala | Thr | Glu | Ala | Gln | Thr | Thr | Pro | Leu |
| | | | | 245 | | | | | 250 | | | | | 255 | |
| Ala | Ala | Met | Glu | Ala | Leu | Ser | Thr | Glu | Pro | Ser | Ala | Thr | Glu | Ala | Leu |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| Ser | Met | Glu | Pro | Thr | Thr | Lys | Arg | Gly | Leu | Phe | Ile | Pro | Phe | Ser | Val |
| | | 275 | | | | | 280 | | | | | 285 | | | |
| Ser | Ser | Val | Thr | His | Lys | Gly | Ile | Pro | Met | Ala | Ala | Ser | Asn | Leu | Ser |
| | | 290 | | | | 295 | | | | | 300 | | | | |
| Val | Asn | Tyr | Pro | Val | Gly | Ala | Pro | Asp | His | Ile | Ser | Val | Lys | Gln | Cys |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Leu | Leu | Ala | Ile | Leu | Ile | Leu | Ala | Leu | Val | Ala | Thr | Ile | Phe | Phe | Val |
| | | | | 325 | | | | | 330 | | | | | 335 | |
| Cys | Thr | Val | Val | Leu | Ala | Val | Arg | Leu | Ser | Arg | Lys | Gly | His | Met | Tyr |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Pro | Val | Arg | Asn | Tyr | Ser | Pro | Thr | Glu | Met | Val | Cys | Ile | Ser | Ser | Leu |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Leu | Pro | Asp | Gly | Gly | Glu | Gly | Pro | Ser | Ala | Thr | Ala | Asn | Gly | Gly | Leu |
| | 370 | | | | | 375 | | | | | 380 | | | | |
| Ser | Lys | Ala | Lys | Ser | Pro | Gly | Leu | Thr | Pro | Glu | Pro | Arg | Glu | Asp | Arg |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Glu | Gly | Asp | Asp | Leu | Thr | Leu | His | Ser | Phe | Leu | Pro | | | | |
| | | | | 405 | | | | | 410 | | | | | | |

<210> 4

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<212> PRT

<213> Homo sapiens

<400> 4

Asp Asp Asp Asp Lys
1 5

<210> 5

<211> 28

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetically generated peptide

<400> 5

| | | | | | | | | | | | | | | | |
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| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Glu | Pro | Pro | Arg | Pro | Met | Met | Asp | Asp | Asp | Asp | Lys | | | | |
| | | | 20 | | | | | 25 | | | | | | | |